

CLAIMS

What is claimed is:

1. A flow control element for use with a drinking cup cap in fluid communication with a spout aperture of the drinking cup cap, the flow control element comprising:

a first stack having an upper portion being configured to be removably sealed adjacent to the spout aperture, said first stack having a sidewall, said sidewall having a first valve to provide selective fluid communication with the spout aperture.

2. The flow control element of claim 1, wherein said first valve comprises a valve face having a valve slit defined therein.

3. The flow control element of claim 2, wherein said valve slit is disposed in a selected position on said valve face, said selected position being selected from the group consisting of a substantially vertical position, a substantially horizontal position, and an angled position.

4. The flow control element of claim 2, wherein said valve slit is disposed in a vertical position on said valve face.

5. The flow control element of claim 4, wherein said valve face is arcuate.

6. The flow control element of claim 2, wherein said valve face comprises more than one valve slit.

7. The flow control element of claim 2, wherein said valve slit comprises two slits in a criss-cross orientation on said valve face.

8. The flow control element of claim 2, wherein said valve face has a selected configuration, said selected configuration being selected from the group consisting of a substantially planar configuration and a substantially non-planar configuration.

9. The flow control element of claim 2, wherein said first valve comprises more than one valve face, each of said more than one valve faces having at least one valve slit.

10. The flow control element of claim 2, wherein said first valve comprises two valve faces disposed on opposing sidewalls of said first stack.

11. The flow control element of claim 10, wherein each of said two valve faces has a vertical slit disposed therein.

12. The flow control element of claim 10, wherein each of said two valve faces has a planar configuration.

13. The flow control element of claim 1, further comprising a lower portion, wherein the drinking cup cap has a first mating member, and wherein said lower portion can engage an inside surface and an outside surface of the first mating member and thereby place said first stack in fluid communication with the spout aperture.

14. The flow control element of claim 13, wherein said lower portion can further engage a bottom surface of the first mating member.

15. The flow control element of claim 1, further comprising:

a second stack having an upper portion being configured to be removably sealed within a second mating member of the drinking cup cap, the second mating member being in fluid communication with a vent aperture, said second stack defining a second valve providing selective fluid communication with the vent aperture.

16. The flow control element of claim 14, wherein the flow control element is formed of a single piece of elastomeric material.

17. A flow control element for use with a drinking cup cap having a first mating surface in fluid communication with a spout aperture, the flow control element comprising:

a first stack having an upper portion and a lower portion, said upper portion being removably sealable in the first mating surface, said lower portion for engaging an inner surface and an outer surface of the first mating surface, said first stack having a first valve for selective fluid communication with the spout aperture.

18. The flow control element of claim 17, wherein said lower portion engages said inner surface, said outer surface, and a bottom surface of the first mating surface.

19. The flow control element of claim 17, wherein said first valve is defined in a sidewall of said first stack.

20. The flow control element of claim 17, further comprising a second stack being removably sealable in a second mating surface of the drinking cup cap, the second mating surface being in fluid communication with a vent aperture, said second stack having a second valve for selective fluid communication with the vent aperture.

21. The flow control element of claim 20, wherein a portion of said second stack can engage an inside surface and an outside surface the second mating surface.

22. The flow control element of claim 21, wherein said second stack can engage said inside surface, said outside surface, and a bottom surface of the second mating surface.

23. The flow control element of claim 20, wherein the flow control element is formed of a single piece of elastomeric material.

24. A drinking cup assembly comprising:

a cup having an open end;

a cap being adapted to seal said open end, said cap having a first aperture and a first mating surface in fluid communication with said first aperture; and

a flow control element having a first stack adapted to have an upper portion removably sealed in said first mating surface, said first stack having a first valve defined in a sidewall thereof, said first valve selectively placing said cup in fluid communication with said first aperture.

25. The drinking cup assembly of claim 24, wherein said first valve has a valve slit defined therethrough.

26. The drinking cup assembly of claim 25, wherein said valve slit is disposed on a valve face defined in said sidewall.

27. The drinking cup assembly of claim 26, wherein said valve slit is disposed in a selected position on said valve face, said selected position being selected from the group

consisting of a substantially vertical position, a substantially horizontal position, and an angled position.

28. The drinking cup assembly of claim 26, wherein said valve slit is disposed in a vertical position on said valve face.

29. The drinking cup assembly of claim 27, wherein said valve face is arcuate.

30. The drinking cup assembly of claim 26, wherein said valve face comprises more than one valve slit.

31. The drinking cup assembly of claim 26, wherein said valve slit comprises two slits in a criss-cross orientation on said valve face.

32. The drinking cup assembly of claim 26, wherein said valve face has a selected configuration, said selected configuration being selected from the group consisting of a substantially planar configuration and a substantially non-planar configuration.

33. The drinking cup assembly of claim 24, wherein said first valve comprises more than one valve face, each of said more than one valve faces having at least one valve slit.

34. The drinking cup assembly of claim 24, wherein said first valve comprises two valve faces disposed on opposing sidewalls of said first stack.

35. The drinking cup assembly of claim 34, wherein each of said two valve faces has a vertical slit disposed therein.

36. The drinking cup assembly of claim 33, wherein each of said two valve faces has a planar configuration.

37. The drinking cup assembly of claim 24, wherein said first stack comprises a lower portion, and wherein said lower portion engages at least an inside and an outside of said first mating member.

38. The drinking cup assembly of claim 37, wherein said lower portion engages said inside, said outside, and a bottom of said first mating member.

39. The drinking cup assembly of claim 24, wherein said flow control element is formed of a single piece of elastomeric material.

40. The drinking cup assembly of claim 24, wherein said cap further includes a second aperture and a second mating surface in fluid communication with said second aperture.

41. The drinking cup assembly of claim 40, wherein said flow control element further comprises:

a second stack having an upper portion and a lower portion, said lower portion for engaging three sides of said second mating surface, said upper portion including a second valve for selectively placing said cup in fluid communication with said second aperture.

42. The drinking cup assembly of claim 41, wherein said second valve is a duckbill valve.

43. The drinking cup assembly of claim 42, wherein said flow control element is formed of a single piece of elastomeric material.

44. A drinking cup assembly comprising:

a cup having an open end;

a cap adapted to seal said open end, said cap having a first aperture defined in a drinking spout, and a first mating member in fluid communication with said first aperture; and

a flow control element having a first stack, said first stack having a portion for frictionally engaging an inside and an outside of said first mating member and thereby place said first stack in fluid communication with said first aperture.

45. The drinking cup assembly of claim 44, wherein said portion frictionally engages said inside, said outside, and a bottom of said first mating member.

46. The drinking cup assembly of claim 44, wherein said portion is a rim disposed at a lower portion of said first stack.

47. The drinking cup assembly of claim 44, wherein said lower portion has an outer dimension that is larger than the outer dimension of an upper portion of said first stack.

48. The drinking cup assembly of claim 44, wherein said first stack comprises a first valve having a valve face and a valve slit defined through said valve face.

49. The drinking cup assembly of claim 48, wherein said first valve is disposed on a sidewall of said first stack.

50. The drinking cup assembly of claim 49, wherein said valve slit is disposed in a selected position on said valve face, said selected position being selected from the group consisting of a substantially vertical position, a substantially horizontal position, and an angled position.

51. The drinking cup assembly of claim 50, wherein said flow control element is formed of a single piece of elastomeric material.

52. The drinking cup assembly of claim 44, wherein said cap further includes an air vent having a second aperture and a second mating member in fluid communication with said second aperture.

53. The drinking cup assembly of claim 52, wherein said flow control element further comprises:

a second stack having a portion for engaging an inside and an outside of said second mating member and thereby place said second stack in fluid communication with said second aperture.

54. The drinking cup assembly of claim 53, wherein said portion of said second stack engages said inside, said outside, and a bottom of said second mating member.

55. The drinking cup assembly of claim 53, wherein said second stack comprises a second valve.

56. The drinking cup assembly of claim 55, wherein said second valve is a duckbill valve.

57. A drinking cup assembly comprising:

a cup having an open end;

a cap being adapted to seal said open end, said cap having

a drinking spout and a first mating member, said first mating member having a first mating surface and being in fluid communication with said spout; and

a flow control element having a first stack, said first stack having a first valve face, first inner and outer surfaces and first upper and lower portions, said first upper portion having a first outer diameter and said first lower portion having a second outer diameter,

wherein said first stack is sized to frictionally engage and hold in position said first mating surface of said first mating member and thereby place said first stack in fluid communication with said spout, wherein said first outer diameter is larger than said second outer diameter, and wherein said first valve face is connected to said first inner surface of said first stack.

58. The drinking assembly of claim 57, wherein said first valve face is concave and curves inwardly toward said first stack.

59. The drinking assembly of claim 58, wherein said first valve face has a first slit formed therethrough.

60. The drinking assembly of claim 57, wherein said first inner surface of said first stack is smooth.

61. The drinking assembly of claim 60, wherein said first inner surface of said first stack is tapered.

62. The drinking assembly of claim 57, wherein said first outer surface of said first upper portion of said first stack is separated from said first mating surface of said first mating member.

63. The drinking assembly of claim 57, wherein said flow control element has a first flange extending outwardly from said first lower portion of said first stack, wherein said first mating member has a first rim, and wherein said first rim abuts against said first flange.

64. The drinking assembly of claim 63, wherein said first flange is substantially perpendicular to a longitudinal axis of said first stack, and wherein said first flange traverses a substantial portion of said cap.

65. The drinking assembly of claim 57, wherein said first stack has a first middle portion disposed between said first upper portion and said first lower portion, and wherein said first outer surface along said first middle portion has a substantially equal slope between said first upper portion and said first lower portion.

66. The drinking assembly of claim 57, wherein said cap has a vent and a second mating member, said second mating member having a second mating surface and being in fluid communication

with said vent, wherein said flow control element has a second stack, wherein said second stack is sized to frictionally engage said second mating surface of said second mating member and thereby place said second stack in fluid communication with said vent.

67. The drinking assembly of claim 66, wherein said second stack has second upper and lower portions, said second upper portion having a third outer diameter and said second lower portion having a fourth outer diameter, and wherein said third outer diameter is larger than said fourth outer diameter.

68. The drinking assembly of claim 67, wherein said second stack has a second valve face, a second inner surface and a second outer surface, and wherein said second valve face is connected to said second inner surface of said second stack.

69. The drinking assembly of claim 68, wherein said second valve face is concave and curves inwardly toward said second stack.

70. The drinking assembly of claim 68, wherein said second inner surface of said second stack is smooth.

71. The drinking assembly of claim 70, wherein said second inner surface of said second stack is tapered.

72. The drinking assembly of claim 68, wherein said second

outer surface of said second upper portion of said second stack is separated from said second mating surface of said second mating member.

73. The drinking assembly of claim 68, wherein said flow control element has a second flange extending outwardly from said second lower portion of said second stack, wherein said second mating member has a second rim, and wherein said second rim abuts against said second flange.

74. The drinking assembly of claim 73, wherein said second flange is substantially perpendicular to a longitudinal axis of said second stack, and wherein said second flange traverses a substantial portion of said cap.

75. The drinking assembly of claim 68, wherein said second stack has a second middle portion disposed between said second upper portion and said second lower portion, and wherein said second outer surface along said second middle portion has a substantially equal slope between said second upper portion and said second lower portion.

76. The drinking assembly of claim 74, wherein said first flange is integrally molded with said second flange to secure said first stack with said second stack.

77. The drinking assembly of claim 68, wherein said second valve face has a second slit formed therethrough.

78. The drinking assembly of claim 57, wherein said first mating member is a cylindrical recess.

79. The drinking assembly of claim 66, wherein said second mating member is a cylindrical recess.